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MEMORANDUM OF THE SECOND MEETING OF THE U.S.-U.S.S.R.
JOINT COMMITTEE ON COOPERATION IN THE FIELD OF
ENVIRONMENTAL PROTECTION, WASHINGTON, D.C.,
NOVEMBER 13-16, 1973

The second meeting of the U.S.-U.S.S.R. Joint Committee on Cooperation in the Field of Environmental Protection was held in Washington, D.C., November 13-16, 1973. The Joint Committee was established by the Agreement on Cooperation in the Field of Environmental Protection, signed in Moscow by the President of the United States, Richard M. Nixon, and the Chairman of the Presidium of the Supreme Soviet of the U.S.S.R., N. V. Podgorny, on May 23, 1972.

Having reviewed the progress made under the Memorandum of Implementation signed at the first meeting of the Joint Committee in Moscow on September 21, 1972, the Joint Committee approved the results of the work carried out during 1973, adopted the present Memorandum setting forth the agreed programs of cooperation in the eleven areas of the Agreement for 1974, and designated the organizations primarily responsible for implementation.

Both sides agreed that the program of cooperation adopted in 1972 reflected on the whole the range of problems faced by both sides in the field of environmental protection, and could serve as a sound basis for further cooperation. In this connection, both sides agreed that during 1974 the development of cooperation would be mainly directed towards the broadening and deepening of cooperation in existing projects. Particular attention will be devoted to the development of joint projects in the creation and improvement of non-polluting technology, and to the coordination of efforts for developing common environmental standards covering all forms of human activity.

Both sides agreed that in the future all major decisions on cooperative programs, including those concerning the organization of new projects and working groups which are developed during meetings of working groups and experts, should be subject to approval at the next regular meeting of the Joint Committee or by its Co-Chairmen.

The following program and plans for specific measures of cooperation for 1974 were agreed upon and adopted during the second meeting of the Joint Committee.

Memorandum - General

I. PREVENTION OF AIR POLLUTION

Cooperation in this area, corresponding to the agreements reached during 1973, will be carried out by three joint working groups.

1. Air Pollution Modeling, Instrumentation and Measurement Methodology

The program for the exchange of data and information, as well as research, agreed to at the first working group meeting will be continued and expanded in 1974. The second full meeting of the working group will be held in the USSR during the second quarter of 1974. A meeting of specialists will be held in the United States during the fourth quarter of 1974. The two sections of this project are Air Pollution Modeling and Standard-Setting and Instrumentation and Measurement Methodology.

The work program of the section on Air Pollution Modeling and Standard-Setting includes:

- Modeling development and quantitative evaluation of pollutant dispersion, with studies to include emission parameters, meteorological conditions, topography and averaging times, and supporting studies including energy budgets and reaction kinetics.
- Special studies in photochemical processes, aerosol physics and chemistry, scavenging, and short-term forecasting.
- Health effects data and methodology and their use as a basis for the setting of standards.

The work program of the section on Instrumentation and Measurement Methodology includes:

- Development of guidelines for measurement networks, including measurement methodology, methodology of chemical analysis, calibration and quality control, and validation and reduction of data.
- Setting up of identical stations in St. Louis and Leningrad for joint comparison of data, data analysis and instrumentation and measurement methodology.

The project as a whole will be the subject of the meetings for 1974 noted above, with specific topics as enumerated in the Minutes of the meetings signed May 22, 1973, in Washington and October 23, 1973, in Leningrad.

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At the above-mentioned meeting of the working group in the USSR, a laboratory comparison will be carried out of gas analyzers in use in both countries. The comparison will also be concerned with the methodology of the measurement, analysis, recording and processing of data. The above-mentioned meeting of specialists on modeling atmospheric pollution, including the joint analysis of the results of observations and their comparison with theoretical models, will take place in the United States during the fourth quarter of 1974.

At these meetings, an exchange of opinion and information will take place concerning the effects of pollutants on human health and the methodology of analyzing these effects, with the aim of setting health standards based on such analyses.

Responsible organizations: U.S.: Environmental Protection Agency; USSR: Hydrometeorological Service.

2. Stationary Source Air Pollution Control Technology

The exchange of information begun following the first working group meeting will be continued. Large differences exist between the technological processes, techniques and methods for the control of atmospheric emissions from various industrial stationary sources. In view of these differences, both sides consider it advisable to carry out the future cooperation of this working group in two separate sections:

- Prevention of air pollution by means of improving technological processes, including fuel cleaning methods and other processes.

- Development of methods and equipment for cleaning emissions from industrial sources.

Cooperative projects in the first section include: Purification and gasification of coal and oil; demetallization of fuel oil; desulfurization and ash removal from coal by mechanical cleaning; and the improvement of pollutant control processes in the iron and steel industry, including in coke ovens.

Cooperative projects in the second section include: Removal of sulfur oxide and particulates from thermal power plants; economic studies of desulfurizing methods; and identification and control of emissions from coal and oil conversion processes.

Activities for 1974 will include a symposium on the control of particulates in January. This will be followed by a second meeting of the working group late in the first quarter of 1974 in the United States.

During the second quarter of 1974, a Soviet team of specialists will visit the United States to develop programs on the prevention of air pollution from stationary sources of industrial gases. Major topics will include control of emissions from ferrous metal processes by means of changes in technology, the design of equipment, systems of fuel combustion, and the utilization of supplementary materials. A team of U.S. specialists will visit Soviet research and production facilities during the fourth quarter of 1974 or the first quarter of 1975.

During the third quarter of 1974, a team of Soviet specialists will visit the United States to develop joint programs in the area of industrial equipment and processes for the removal of sulfur and ash from solid and liquid fuel by chemical and mechanical means, and also coal and oil gasification and fuel gas cleaning. A U.S. team will visit the USSR in this field during the fourth quarter of 1974.

During the second half of 1974, a U.S. team of specialists will visit the USSR to develop programs on the design of equipment for the control of particulates and harmful chemical substances. A major objective of the meeting will be to develop joint research projects and discuss possibilities for the future exchange of specialists.

During the second quarter of 1974, a team of Soviet specialists will visit the United States to discuss research work on cooperative programs in the field of desulfurization of sulfur dioxide from stack gases by means of ammonia and magneside and other processes. A U.S. team will make a return visit to the USSR during the second half of 1974.

Responsible organizations: U.S.: Environmental Protection Agency; USSR: Main Administration of Gas Purification, Ministry of Petroleum and Chemical Machine Construction; for the metallurgical projects, also the Ministry of Ferrous Metallurgy.

3. Transportation Source Air Pollution Control Technology

The exchange of information begun following the first working group meeting will be continued. The main topic for study is control methods for reducing pollution from

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transportation sources, in particular automobiles, and also transportation planning. The first phase of the joint study includes the development of comparable methods for the measurement of pollutants from transportation sources for the assessment of the problem as a whole, and methods of control. The Soviet side is to develop emissions measurement methodology which will then be compared with current U.S. techniques. A formal system for routine screening of literature is to be developed for the purpose of exchanges. A meeting of specialists has been scheduled in the United States for the spring of 1974, where the details of the emissions measurement program and transportation planning study will be discussed in accordance with the Minute of the first working group meeting. It is anticipated that a meeting of specialists will take place at the end of 1974 in the USSR for the purpose of mutual familiarization with and comparison of emissions measurement research in the two countries. The meeting of the full working group will be held in the United States at the end of 1974.

Responsible organizations: U.S.: Environmental Protection Agency; USSR: Ministry of Tractor and Agricultural Machine Building.

II. PREVENTION OF WATER POLLUTION

A meeting of the working group on the prevention of water pollution will take place in the United States in August or September 1974. At this meeting, the results of cooperation will be reviewed and the program of future work on the projects under this area will be developed.

Cooperation in this area during 1974 will be carried out in four separate projects:

1. Studies and Modeling of River Basin Pollution

At its first meeting the working group adopted a program of study in water planning concentrating initially on the Delaware and Ohio River basins in the United States and the Seversky Donets River basin in the USSR. The planned final step of the program is an experiment in which each country's planners will draw up a plan of water quality protection for one of their own rivers using the other country's planning methodology, data, and legal and institutional norms. Exchanges of specialists in this field will take place during the third quarter of 1974.

2. Protection and Management of Lakes and Estuaries

The program for the exchange of information and data and of water samples will be continued and expanded. The U.S. side is analyzing samples collected during the field trip to Lake Baikal in August 1973, and opportunity for collecting samples will be afforded the Soviet group that will visit the United States in September 1974, during a field trip to one or more of the Great Lakes and Lake Tahoe.

3. Effect of Pollutants upon Aquatic Ecosystems and Permissible Levels of Pollution

The first meeting of specialists, to be held in conjunction with a symposium on the effect of pollutants on water ecosystems, is planned for the second half of 1974 in the United States.

4. Prevention or Treatment of Waste Discharge

This group will study specific water pollution abatement techniques, including land disposal of both untreated municipal sewage and sludge from municipal treatment systems; reduction of water pollution from industrial plants, such as manufacturers of pulp and paper. A visit by a Soviet delegation in the environmental aspects of paper and pulp manufacturers is planned in March-April 1974. A delegation of U.S. specialists will visit the USSR in the third quarter of 1974 for familiarization with the methods for preventing water pollution during production processes of steel sheets, purification of waste water from scale and oils, purification of water from acids and other wastes of metallurgical industries causing water pollution. The delegation of Soviet specialists on chemical technology will visit the United States in the second quarter of 1974 for familiarization with working experience and for drawing up a program of cooperation in the field of prevention of water pollution by installations of the chemical industry. At the time of the meeting in the USSR in December of 1973, both sides will consider whether waste water treatment in Arctic areas should be included, and how work in this area can best be pursued.

Responsible organizations: U.S.: Environmental Protection Agency; USSR: Ministry for Reclamation and Water Management and the Hydrometeorological Service.

Taking into consideration both the importance and the complexity of the field of technological measures for prevention of water pollution by wastes from municipal and industrial sources, and the increasing amount of cooperation in this field, the Joint Committee agrees to the formation of a new working group in this subject area to be called the Working Group on Pollution Prevention from Municipal and Industrial Sources. The responsible organizations for this working group will be decided after its formation.

III. PREVENTION OF ENVIRONMENTAL POLLUTION ASSOCIATED WITH AGRICULTURAL PRODUCTION

Taking into consideration the fact that the United States and the USSR concluded in 1973 an Agreement on Cooperation in the Field of Agriculture, both sides agreed that in the future cooperation on the following projects, Pollution Caused by Feedlots, and Wind Erosion and Dessication, will be carried out within the framework of the Agreement on Cooperation in the Field of Agriculture.

During 1974 the Co-Chairmen of the Joint Committee will consider under which bilateral agreement future work should be carried out on the project on Integrated Pest Management. Until a final decision of this question, cooperation on the project will be carried out within the framework of the present Agreement. In this connection, agreement will be reached in the near future on the plan for joint measures during 1974. A symposium on short-range and long-range prediction of pest populations is planned in the United States during the summer of 1974; and exchanges of museum specimens of pests, and of live biological material for use in integrated pest management practices, will continue during 1974.

The Co-Chairmen of the Joint Committee will also consider during 1974 under which bilateral agreement future work on the project, Effect of Air Pollutants on Forests and Plants, will be carried out.

Within the framework of the present Agreement, two new projects will be carried out: (1) Effect of Chemicals Used in Agriculture on Fauna; and (2) Forms and Mechanisms by which Pesticides and Chemicals are Transported in Soil, Water and Biota. On the first of these projects, two U.S. specialists will be included in the U.S. delegation to the USSR in the fourth quarter of 1974 for the working group meeting on wild fauna, flora and preserves (Area V). On the second of these projects, a conference of specialists will take place during the third quarter of 1974, either in the United States or the USSR, to work out a program of cooperation.

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Responsible organizations: U.S.: U.S. Department of Agriculture (with the participation of the Environmental Protection Agency and the Department of the Interior); USSR: Ministry of Agriculture and (for the last-named project) Hydrometeorological Service.

IV. ENHANCEMENT OF THE URBAN ENVIRONMENT

Preliminary agreement on cooperation was reached at the first working group meeting. The exchange of information already begun will be continued during 1974. The following concrete areas for research are proposed: comprehensive planning and urban development; solid waste management; noise abatement and control; urban transportation; historic preservation and parks; planning and development of new towns and new communities; construction and waste management technologies in permafrost areas.

Specific projects and the time frame for conducting research will be determined in the course of developing work plans during the second session of the working group in Moscow in November 1973. At this meeting the following six specific projects, which have been proposed by the Soviet side during the Joint Committee meeting, will be discussed:

- Determination of optimal interrelationships between the development of public and private urban transportation in cities of various sizes;
- Sterilization and utilization of solid wastes;
- Urban design aspects of urban noise abatement;
- Determination of basic criteria for environmental quality in new cities;
- Provision of urban environmental quality under climatic conditions of the far north;
- A meeting of the working group to consider the problem of the urban environment as a whole.

Proposals to be made by the U.S. side will also be discussed.

Responsible organizations: U.S.: Department of Housing and Urban Development; USSR: State Committee on Civil Construction and Architecture.

V. PRESERVATION OF NATURE AND THE ORGANIZATION OF PRESERVES

The comprehensive work program initiated under this area in 1973 will be continued and amplified during 1974 as agreed upon at the meeting in January 1973 in Moscow and the meeting in October 1973 in Washington.

Work to be continued includes: The exchange of literature and other information; joint field work by specialists; long-term visits by scientists for participation in joint research; consultation and cooperation on bilateral and international conventions for the protection of endangered species and other areas of nature protection; and exchanges of films on conservation and wildlife and nature protection.

Cooperation will be carried out during 1974 in the following projects:

1. Protection of rare and endangered species of plants and animals and non-exploited species of animals;
2. Protection of northern ecosystems;
3. Organization of preserves;
4. Utilization and management of economically beneficial species of wild animals;
5. Marine mammals.

During 1974 a proposal will be examined to expand work on the project, Protection of desert (arid) ecosystems.

Taking into account the wishes of the American side, efforts will be made as soon as possible on a convention for the conservation of migratory birds of the United States and the USSR, with the possible enlargement of this convention to other endangered species.

The coordination of cooperation within the above-named projects will be carried out through contacts between project chairmen. If necessary, the question will be examined of setting up one or more working groups for the coordination of work on the projects of this area. This question will be decided and action taken by the corresponding project chairmen.

In the third quarter of 1974, two Soviet specialists will be sent to the United States to participate in American work on the study of the distribution, numbers, biology, and migration patterns of waterfowl migrating between the United States and the USSR.

In the third quarter of 1974, a group of American specialists will visit the USSR and familiarize itself with the methods for protection of rare plants used in the USSR and also with work on the study of the interrelationship between flora and fauna of the United States and the USSR.

In the third quarter of 1974 two Soviet specialists will visit the United States to participate in American field radiotelemetric research on land mammals. A group of Soviet specialists will visit the United States in the third quarter of 1974 to study the American experience in protecting threatened species of animals and plants. The group will include specialists on steppe and prairie ecosystems.

In the third quarter of 1974 a visit to the USSR is planned for U.S. specialists in the protection of endangered species and the organization of preserves.

In the area of protection of northern ecosystems, both sides will exchange delegations of specialists in the third and fourth quarters of 1974 involved in the protection of nature in tundra and permafrost regions. In the second and fourth quarters of 1974, there will be an exchange of visits of specialists for joint study of experience in breeding of musk-oxen in the United States and protection of the wild reindeer in the USSR.

There will be a working group for the project on marine mammals which will consider all problems involving marine mammals (other than the polar bear). The meetings of specialists on the protection of marine mammals (specifically the Pacific walrus) will take place in the USSR during the fourth quarter of 1974.

The Soviet side proposes that at the end of 1974 or the beginning of 1975 two American scientists participate in the work of studying the biology and marking of whales in the regions where they winter. This research will be conducted on board a Soviet scientific research vessel.

Responsible organizations: First four projects:
U.S.: Department of the Interior and the Smithsonian Institution; USSR: Ministry of Agriculture and Academy of Sciences of the USSR. Marine mammal project: U.S. National

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Oceanic and Atmospheric Administration (with the participation of the Department of the Interior and the Smithsonian Institution); USSR: Ministry of the Fishing Economy.

VI. PROTECTION OF THE MARINE ENVIRONMENT FROM POLLUTION

Both sides have agreed to continue cooperative work in this area in three independent projects:

1. Protection of the environment during well drilling, production and pipeline transportation of oil and gas.
2. Protection of the sea from oil pollution resulting from shipping activities.
3. Effect of pollutants on marine organisms.

1. Protection of the Environment During Well Drilling, Production, and Pipeline Transportation of Oil and Gas

Both sides have agreed to continue scientific and technical cooperation in the following topics:

- Organizational, technical and technological measures and special technical equipment used to prevent pollution of the sea and other water bodies during well drillings and production of oil and gas.

- Techniques and technology of collecting, treating and transportation of oil at oil fields for the purpose of protecting environmental pollution.

During the second quarter of 1974, the regular meeting of the working group for the first project will be held in the United States, and in the third quarter there will be a conference of specialists in this project in the USSR. During these meetings, information will be exchanged on organizational, technical and technological measures and special technical equipment used in preventing environmental pollution during exploration, well drilling, production and pipeline transportation of oil.

Precise dates and programs for this exchange will be agreed upon by the co-chairmen of the working group no later than December 1973.

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Both sides agree that the problem of oil pollution is not limited to the marine environment. Consequently, the Co-Chairmen of the Joint Committee will consider the desirability of establishing a new problem area on the protection of the environment in general from oil pollution. During the coming year the Co-Chairmen will exchange views and recommendations on the establishment of such a new problem area.

Responsible organizations: U.S.: U.S. Geological Survey, Department of the Interior; USSR: Ministry of the Oil Industry.

2. Protection of the Sea from Oil Pollution from Shipping Activities

A meeting of the working group will be held in the USSR during the fourth quarter of 1974. This meeting will be preceded in the second quarter of 1974 by the visit of a delegation of Soviet specialists to the United States for the exchange of experience in solving a number of technical problems.

Responsible organizations: U.S.: U.S. Coast Guard, Department of Transportation; USSR: Ministry of the Maritime Fleet.

3. Effect of Pollutants on Marine Organisms

Within the framework of the third project, special attention will be given to the development of the scientific bases for systematic observation of the pollution of sea water and hydrobiota and the consequences of such pollution. In the second through the fourth quarters of 1974, qualified specialists, or groups of specialists, consisting of from eight to ten persons from each side will be exchanged with an average period of each visit of about two weeks. The purpose of this exchange will be to acquaint the specialists with the most important work in this field, give lectures, and discuss scientific problems. The project chairmen will exchange proposals on the precise dates of visits in the first quarter of 1974, and on the number of visiting specialists before December 10, 1973. Similar exchanges of proposals for the second half of 1974 will be made before March 1, 1974.

A meeting of specialists for the development of a program for cooperative work in the systematic study of the extent of pollution of sea and ocean waters and hydrobiota, including recommendations for standard methods of analysis and means of observation, will be held in the second quarter of 1974 in the

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United States. In particular, the possibility of American specialists participating in a Soviet ocean voyage to study the extent of pollution, during the third and fourth quarters of 1974, will be discussed.

The U.S. side proposed that periodic publishing of a joint U.S.-Soviet publication of scientific works on questions relating to this project be organized by mid-1974. This proposal is looked upon favorably the Soviet side, which will examine means for its accomplishment in the near future.

Responsible organizations: U.S.: Environmental Protection Agency, and National Oceanic and Atmospheric Administration of the Department of Commerce;
USSR: Hydrometeorological Service, and Ministry of Higher and Secondary Specialized Education.

VII. BIOLOGICAL AND GENETIC EFFECTS OF ENVIRONMENTAL POLLUTION

1. Biological and Genetic Effects of Pollutants

The program of cooperation for this project which was agreed upon at the first meeting of specialists will be carried out and will be augmented in the field of data exchange. It is planned that a group of U.S. mutagenecists will participate in a symposium on mutagenetic effects of environmental pollutants on man, which will take place in the USSR in February 1974. The project chairmen will discuss the question of carrying out reciprocal laboratory visits and joint research on agreed topics during 1974.

Study topics will be:

- Mutagenesis: (a) assay systems for screening environmental pollutants for genetic activity; (b) assay systems to monitor the genetic load in the human population; and (c) exchange of literature surveys.

- Heavy metals: U.S. work on cadmium, mercury and lead will be reviewed, with cooperative work to begin on cadmium.

- Epidemiology.

The study on the extrapolation of animal toxicological tests to man is hereby transferred to the U.S.-Soviet Health Agreement.

Responsible organizations: U.S.: National Institute of Environmental Health Sciences, Department of Health, Education and Welfare, and the Environmental Protection Agency; USSR: USSR Academy of Sciences.

2. Comprehensive Analysis of the Environment

Within the framework of this project, a joint U.S.-Soviet symposium will take place in Tbilisi (USSR) in March 1974. The symposium will focus on comprehensive environmental management of different types of regions, delineating permissible human and ecological stress factors, environmental loadings, interaction between man and his environment, and the scientific bases for monitoring.

Delegations of specialists will be exchanged during the third quarter of 1974 for the purpose of familiarization with the work being carried on in both countries. The scientific institutions to be visited will be decided on during the above-mentioned symposium in March 1974.

Responsible organizations: U.S.: Environmental Protection Agency; USSR: Hydrometeorological Service.

VIII. INFLUENCE OF ENVIRONMENTAL CHANGES ON CLIMATE

Both sides have agreed that the cooperation in this problem will be held in future on the following areas:

1. Joint studies of the effects of changes in the heat balance of the atmosphere on the climate.

These will include:

- The influence of the changes of solar activity on the climate;

- The modeling of the climate;

- The assessment of past changes of the climate on the basis of analysis of natural objects and data.

2. Joint studies of the effects of pollution of the atmosphere on climate.

These will include:

- Monitoring atmospheric constituents and assessment of their effects on climate;

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- The effect of pollution of the upper levels of the atmosphere on the climate.

3. Joint studies of the meteorology and air-sea interaction of polar regions in both hemispheres as they affect the climate of the planet.

It is noted the joint U.S.-USSR programs in the polar regions, such as POLLEX and AIDJEX, are at the same time part of other international agreements such as The Global Atmospheric Research Program. Activities in this area would be carried out consistent with the framework of these international programs. The detailed program of cooperation on all aspects of this area will be agreed and adopted at the working group meeting which will be held on June 10-21, 1974 in the USSR.

Responsible organizations: U.S.: National Oceanic and Atmospheric Administration, Department of Commerce; USSR: Hydrometeorological Service.

IX. EARTHQUAKE PREDICTION

1. Earthquake Prediction

The program of cooperation in this area, which was coordinated and initiated during the first two meetings of the working group, will continue during 1974. It is planned for 1974 that the exchange of visits by scientists will, on an overall basis, equal twenty-four man-months. Plans will be developed for exchange of publications and technical data.

Cooperation on this subject will be conducted within the framework of the following four projects:

1. Field Research on Earthquake Prediction

Cooperation on this subject will permit the study of the seismological conditions in connection with the plan of development of methods of forecasting earthquakes in the San Andreas Fault region (California, United States) and in the Gram-Dushanbe region (USSR). The program includes experimental work in California and Garm-Dushanbe, standardization of instruments and methods, joint observations, study of the earth's crust, and geological research.

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A group of U.S. specialists will visit the USSR during the second to fourth quarters of 1974 for the purpose of setting up and adjusting U.S. instruments (telemetering stations and seismometers) which will be installed in the Garm testing ground and in the region of the Nurek dam in the Tadzhik SSR. A small group of Soviet specialists will visit the United States during the second to fourth quarters of 1974 to participate in joint scientific research work to study the structure and properties of the earth's crust and the upper mantle and their relation to earthquakes. During the second to fourth quarters of 1974, an exchange of small groups of geological specialists will be carried out for a comparative study of the geological structure of the San Andreas Fault in the United States and the Garm-Dushanbe region in the USSR.

2. Laboratory and Theoretical Investigation of Physics of the Earthquake Source

Within the frame of reference of this project, the physics of the earthquake source will be investigated for better understanding of phenomena foretelling earthquakes.

In the second to fourth quarters of 1974, an exchange of small groups of specialists will be carried out with participation in joint studies being arranged in connection with the project.

3. Mathematical and Computational Methods of Prediction of Areas of Strong Earthquakes, and Evaluation of Seismicity and Seismic Risk

Within the frame of reference of this project, the predictive methods in the areas of strong earthquakes will be investigated in order to establish the regularity of their occurrence and to develop a basis for optimization of seismic zoning.

Within the second to fourth quarters of 1974, an exchange of small groups of specialists will be carried out to conduct joint studies in the development of phenomenology of areas where strong earthquakes occur. Within this time frame an exchange of small groups of specialists will be implemented for the purpose of joint studies to evaluate the various degrees of seismic risk on the basis of statistical modeling. Work will begin on synthesizing the catalogue of earthquakes by the exchange of small groups of specialists.

4. Engineering-Seismological Research

In accordance with the theme of the project, the development of engineering criteria will be investigated from the point of view of seismoresistant design during strong earthquakes, taking ground conditions into account.

During the second to fourth quarters of 1974, an exchange of specialists will be carried out to conduct joint studies in the prediction of internal stresses within elements of buildings during strong motion, on the basis of seismic and geological engineering information.

The U.S. side will prepare and transmit to the USSR, prior to December 10, 1973, its proposals for sending U.S. specialists to the USSR in the first half of 1974 for the whole area, indicating the number of specialists and the dates and duration of their visits. The Soviet side will transmit analogous proposals to the U.S. side by December 10, 1973. The cooperating sides will exchange, prior to March 1, 1974, proposals concerning the visits of specialists during the second half of 1974.

Responsible organizations: U.S.: U.S. Geological Survey, Department of the Interior; USSR: Academy of Sciences of the USSR.

2. Consolidated U.S.-Soviet Tsunami Early Warning System

A meeting is planned for the third quarter of 1974 in the United States for the purpose of initiating cooperation in this field. Specialists will investigate the possibility of creating a consolidated tsunami early-warning system.

Responsible organizations: U.S.: National Oceanic and Atmospheric Administration, Department of Commerce; USSR: Academy of Sciences of the USSR.

X. ARCTIC AND SUBARCTIC ECOLOGICAL SYSTEMS

The two sides agreed to continue the cooperative program involving arctic and subarctic areas, undertaken, as agreed in the first meeting of the Joint Committee, under other areas of the Agreement as follows:

1. Consideration of waste water treatment in arctic areas, under Area II, Water Pollution.

2. Construction and waste management technologies in permafrost areas, under Area IV, Urban Environment.

3. Protection of northern ecosystems, under Area V, Nature and Preserves.

4. Consideration of transportation of oil and gas on permafrost regions, under Area VI, Marine Pollution.

5. Meteorology and air/sea interaction of polar regions as they affect the climate of the planet, under Area VIII, Climate.

Although the work under these projects will be carried out separately, the U.S.-USSR Joint Committee or its representatives will review the progress under this area, to provide coordination and liaison between the different working groups, and the representatives will meet if necessary.

XI. LEGAL AND ADMINISTRATIVE MEASURES FOR PROTECTING ENVIRONMENTAL QUALITY

The exchange of information will be continued during 1974 on legal and administrative measures for protecting environmental quality, and a second meeting in this area will be held in Moscow in May 1974.

The main theme of the meeting will be a discussion of the problems of the interrelationship between national and international legal systems related to the protection of the environment. Topics for study include: (1) questions of governmental organization, including procedures for analyzing the environmental impact of major governmental decisions; (2) questions of developing legislation; (3) procedures for reaching decisions on major construction projects and development of the most important areas of industrial production affecting the environment; (4) implementation and enforcement of legal requirements for environmental protection, using concrete examples; (5) participation by the public (for example through mass-membership organizations) in resolving problems of environmental protection; (6) economic aspects of pollution; (7) questions of harmonization of standards in establishing pollution limits in the area of preservation of water resources and atmosphere, including consideration of possible subjects for standardization. Item (7) is intended to be the subject of two special meetings, the first to be held in the third quarter of 1974 in the United States and second in the USSR at the end of 1974.

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The exchange of long-term visits by environmental legal scholars is planned for the academic year 1974-75, with a Soviet scholar invited to work at the Woodrow Wilson Center in Washington, D.C., and an equivalent opportunity offered an American scholar or scholars at the Institute of State and Law, USSR Academy of Sciences.

The possibility is being explored of facilitating cooperation between mass-membership organizations (for example, the Audubon Society, the National Wildlife Federation and the Sierra Club in the United States, and the All-Russian Society for Nature Protection in the Soviet Union).

Responsible organizations: U.S.: Council on Environmental Quality; USSR: USSR Academy of Sciences (topics one through six) and USSR State Committee on Standardization (for topic seven).

In accordance with the wishes of the American side, an invitation was extended for the United States to present an exhibition of equipment for the monitoring and analysis of environmental pollution, to be held in the fourth quarter of 1974 or the first quarter of 1975 in the Soviet Union. The invitation was accepted. A number of American firms which manufacture such equipment, as well as governmental agencies, will participate in the exhibition, which will be accompanied by a seminar at which U.S. and Soviet specialists will present reports on equipment and methodology for monitoring environmental pollution. Arrangements for the exhibition will be made by the responsible U.S. organization with the All-Union Chamber of Commerce and Industry of the U.S.S.R.

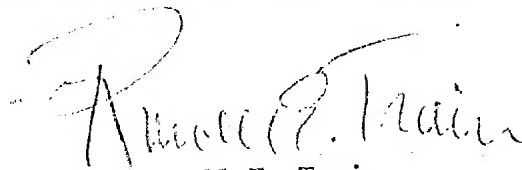
A discussion took place on the role of the non-governmental sector in environmental protection, and it was agreed that governmental contacts under the program should serve to facilitate non-governmental contacts between the two countries.

The possibility was discussed of joint bilingual publications on the problems of environmental protection, and it was agreed that this question would be considered further by the Chairmen or Coordinators of the two sides.

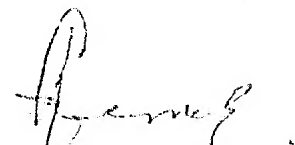
The next meeting of the Joint Committee will take place in Moscow in December 1974. The Chairmen or Coordinators will meet during the period between the sessions to decide questions that arise in the implementation of plans for cooperation.

Signed in Washington, D.C., in the English and Russian languages, both texts being equally authentic, on November 16, 1973.

Chairman for the United States


Russell E. Train

Chairman for the U.S.S.R.


E. K. Fedorov

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